

REMARKS

This is intended as a full and complete response to the Office Action dated August 3, 2009, having a shortened statutory period for response set to expire on November 3, 2009. Claim 20 has been cancelled without prejudice. Claims 1, 10, 12, 21-24 and 27-28 have been amended and new claim 29 has been added to more clearly recite various aspects of the invention. Support for these amendments and the new claim may be found throughout the specification, including paragraphs [0078]-[0090]. Applicants believe no new matter has been introduced by the amendments presented herein. The amendments have been made in a good faith effort to advance prosecution on the merits. Applicants reserve the right to subsequently take up prosecution of the claims as originally filed in this application in a continuation, a continuation-in-part and/or a divisional application. Please reconsider the claims pending and the new claim in the application for reasons discussed below.

Applicants would like to thank the Examiner for considering the arguments filed on July 15, 2009 with respect to claims 10 and 12-16 as persuasive and for withdrawing the rejection and the finality of the present application.

Claims 1, 20, 21, 23, 24, 26 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,353,121 ("Ray") in view of U.S. Patent No. 4,520,467 ("Berni"). Claim 20 has been cancelled without prejudice, thereby rendering the rejection to claim 20 moot. Claim 1 has been amended to replace "seismic data" with "acceleration of wavefield traces." Support for this amendment may be found throughout the specification, including paragraphs [0078]-[0090]. Applicants respectfully submit that neither Ray nor Berni, alone or in combination, teaches these newly added limitations.

Ray is generally directed towards determining the velocity for ghost reflections. (See Ray, column 5, lines 10-18). In order to determine the velocity for the ghost reflections, Ray employs **acceleration-cancelling hydrophones** which remove or cancel acceleration wavefields from seismic data. (See Ray, column 7, lines 32-35). Ray never describes using acceleration wavefield traces, as newly recited in claim 1. In contrast, Ray only proposes using seismic data that includes velocity information to

determine the velocity for ghost reflections. (See Ray, column 10, lines 16-20; column 12, lines 42-44, lines 53-56; column 12, line 67 – column 13, line 4). In fact, Ray never mentions using acceleration wavefields traces or acceleration data anywhere in its disclosure. In this manner, Ray's method for processing seismic data is not feasible using acceleration wavefield traces because Ray's methods for data processing steps are directed towards processing velocity data as opposed to acceleration wavefield traces, as recited by claim 1.

The Examiner admits that Ray does not disclose acquiring, or retrieving from storage, seismic data representative of an acceleration wavefield. The Examiner attempts to supplement this missing limitation with Berni. (See office action, page 5). Berni is directed at eliminating ghosts from seismic signals using a method that employs **both** a pressure sensor and a motion sensor. (See Berni, abstract). As mentioned above, claim 1 has been amended to now replace "seismic data" with "acceleration wavefield traces." As such, each processing step recited in claim 1 is performed on the **acceleration wavefield traces**. In contrast, the data processing steps described in Berni **requires both pressure data and particle motion data** to eliminate ghosts from its seismic signals. In fact, throughout its disclosure, Berni describes processing the output signal from a hydrophone to sense the acoustic pressure waves and the output signal from a motion sensor to sense the movement of water particles in order to eliminate ghosts from its seismic signals. (See Berni, column 2, line 67 – column 3, line 12; column 3, lines 54-58; column 3, line 66 – column 4, line 3; column 4, lines 4-14, 31-33, 55-62; column 5, lines 3-36; Figures 2 & 5). Therefore, Berni does not teach processing acceleration wavefield traces, as recited in claim 1.

Since neither Ray nor Berni teaches all the limitations of claim 1, claim 1 is patentable over Ray in view of Berni. Claims 21-28 are also patentable over Ray in view of Berni since they depend from claim 1. Withdrawal of the rejection is respectfully requested.

Claims 10 and 12-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ray in view of Berni, and further in view of US Patent No. 6,868,038 ("Leaney"). Applicants respectfully traverse the Examiner's use of Leaney as a prior art reference in view of 35 U.S.C. § 103(c)(1), which states that the subject matter

developed by another person, which qualifies as prior art only under one or more of subsections (e), (f) and (g) of section 102, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time of the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person. Leaney is assigned to Schlumberger and the present application is assigned to WesternGeco which is a business unit of Schlumberger. As such, Leaney cannot be used to preclude the patentability of the Applicants' claimed invention, because Leaney is a published patent defined under 35 U.S.C. § 102(e) and both Leaney and the present application are commonly assigned.

For this reason, the analysis under 35 U.S.C. § 103(a) is provided herein below without reference to Leaney. Claim 10 has been amended to now replace "seismic data" with "acceleration wavefield traces." Support for this amendment may be found throughout the specification, including paragraphs [0078]-[0090]. Neither Ray nor Berni teaches an apparatus for processing acceleration wavefield traces, which is described in claim 10. Since claims 12-14 depend from claim 10 and since neither Ray nor Berni, alone or in combination, teaches, discloses or suggests all the limitations of claim 10, claims 12-14 is therefore also patentable over Ray and Berni. Withdrawal of the rejection is respectfully requested.

Claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ray in view of Berni and Leaney, and further in view of further in view of US Patent No. 6,151,556 ("Allen"). As mentioned above, Leaney is not a proper reference. Accordingly, the analysis is provided without reference to Leaney. Claim 10 has been amended to now include "acceleration wavefield traces." Neither Ray nor Berni nor Allen teaches an apparatus for processing acceleration wavefield traces, which is described in claim 10. Since claim 15 depends from claim 10 and since neither Ray nor Berni nor Allen, alone or in combination, teaches, discloses or suggests all the limitations of claim 10, claim 15 is therefore also patentable over Ray, Berni and Allen. Withdrawal of the rejection is respectfully requested.

Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ray in view of Berni and Amundsen, and further in view of US Patent Application Publication No. 2004/0109389 ("Quinn"). Applicants believe that the Examiner intended

to cite Allen instead of Amundsen because the Examiner agreed that Amundsen is not a proper reference. (See office action, page 4). Nevertheless, neither Ray nor Berni nor Allen nor Quinn, alone or in combination, teaches or discloses an apparatus for processing acceleration wavefield traces, as described in claim 10. Since claim 16 depends from claim 10 and since neither Ray nor Berni nor Allen nor Quinn, alone or in combination, teaches, discloses or suggests all the limitations of claim 10, claim 16 is therefore also patentable over Ray, Berni, Allen and Quinn. Withdrawal of the rejection is respectfully requested.

Claim 22 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ray in view of Berni and further in view of US Patent No. 4,979,150 ("Barr"). Neither Ray nor Berni nor Barr, alone or in combination, teaches or discloses processing acceleration wavefield traces, as described in claim 1. Since claim 22 depends from claim 1 and since neither Ray nor Berni nor Barr, alone or in combination, teaches, discloses or suggests all the limitations of claim 1, claim 22 is therefore also patentable over Ray, Berni and Barr. Withdrawal of the rejection is respectfully requested.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ray in view of Berni and further in view of US Patent No. 5,642,327 ("Schiflett"). Neither Ray nor Berni nor Schiflett, alone or in combination, teaches or discloses processing acceleration wavefield traces, as described in claim 1. Since claim 25 depends from claim 1 and since neither Ray nor Berni nor Schiflett, alone or in combination, teaches, discloses or suggests all the limitations of claim 1, claim 25 is therefore also patentable over Ray, Berni and Schiflett. Withdrawal of the rejection is respectfully requested.

Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Ray in view of Berni and further in view of US Patent Application Publication No. 2004/0070529 ("Kamas"). Neither Ray nor Berni nor Kamas, alone or in combination, teaches or discloses processing acceleration wavefield traces, as described in claim 1. Since claim 27 depends from claim 1 and since neither Ray nor Berni nor Kamas, alone or in combination, teaches, discloses or suggests all the limitations of claim 1, claim 27 is therefore also patentable over Ray, Berni and Kamas. Withdrawal of the rejection is respectfully requested.

New claim 29 has been added to more clearly recite various aspects of the invention. Support for new claim 29 may be found throughout the specification, including paragraphs [0078]-[0090]. Applicants respectfully submit that none of the references of record teach “acquiring, or retrieving from storage, seismic data representative of only acceleration wavefield traces” and performing various processing steps to the seismic data. Therefore, new claim 29 is in condition for allowance.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the claimed invention. Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

/Ari Pramudji/ October 26, 2009

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